Ninyo & Moore
Geotechnical and Environmental Sciences Consultants

December 10, 2004
Project No. 301646001

Mr. John Krause
U.S. Department of the Interior
Bureau of Indian Affairs
Western Regional Office
Two Arizona Center
400 North 5th Street
Phoenix, Arizona 85004

Subject: Report of Findings and Recommendations
OMG Apex Site
St. George, Utah

Dear Mr. Krause:

In accordance with purchase order #SMH00040268, dated September 16, 2004, Ninyo & Moore has prepared a Report of Findings and Recommendations for the reclamation of the OMG Apex facility located approximately 15 miles west of St. George, Washington County, Utah.

INTRODUCTION

The OMG Apex site (Apex facility) is located approximately 15 miles west of St. George, Washington County, Utah and approximately 0.5 miles south of State Highway 91 on the eastern slope of the Beaver Dam Mountains. The USGS Shivwits, Utah Quadrangle, 7.5-minute series topographic map, provisional edition 1983, identifies the site as being located in Section 5, Township 42 South, Range 17 West at an elevation of approximately 3,700 feet above mean sea level with drainage of the site toward the northeast and the Santa Clara River, located approximately 2 miles to the northeast. The site location is presented on Figure 1.

The subject property encompasses approximately 180 acres of leased trust land of the Shivwits Band (the Band) of Paiute Indians (Figure 1). Of the total lease acreage, approximately 30 acres are used for plant operations, approximately 70 acres are used for general storage and waste disposal, and the remaining approximately 80 acres are under lease but were not used except for construction of two small parking lots located west of the facility. There are a total of 17 buildings on the site. Facilities include tungsten and cobalt processing buildings and associated feed

and storage areas; four lined waste evaporation ponds; miscellaneous extraction and neutralization areas; a reagent storage area; a building housing maintenance, warehouse, and office spaces; ore storage and handling areas; and water storage facilities. Operations at the facility included leaching, solvent extraction, chemical precipitation, filtration, drying, and calcining to remove impurities. A site plan is presented on Figure 2.

BACKGROUND

The Apex facility was originally constructed in 1984 by St. George Mining Company as a processing mill for gallium and germanium ore from the Apex mine located in the Beaver Dam Mountains. In 1989, Hecla Mining Company (Hecla) purchased the facility and upgraded it to process germanium ore until closure of the mine and processing facility in 1990. Hecla converted the facility to a cobalt recycling operation utilizing products from non-hazardous recyclable materials in 1991.

In 1995, OMG, Inc. (OMG) purchased the processing facility from Hecla and increased the cobalt production of the facility. In 1998, OMG constructed a tungsten recycling plant at the facility. OMG operated the facility using non-hazardous cobalt and tungsten-containing by-products from many industries. These materials included cobalt oxide sludge, spent cobalt catalysts, cobalt manganese ashes, cobalt samarium, tungsten carbide sludge, and hard scraps imported from outside of Utah. Operations at the facility were terminated at the end of 2002.

CLOSURE ACTIVITIES

In accordance with the Sampling and Analysis Plan (SAP) approved on February 27, 2003, OMG has performed various reclamation activities to date. The SAP and Final Reclamation Plan, dated January 30, 2004, identified 19 areas of concern (AOC) where field sampling was anticipated and identified four phases of field sampling to be completed prior to completion of reclamation activities at the facility. Additionally, reclamation soil criteria (RSC) were established for 11 metals potentially present at the facility based on historical operations. Reclamation soil criteria were established for three additional metals and total petroleum hydrocarbons (TPH) prior to initiation of sampling activities. These RSC are based on measured site background levels

correlated with established EPA Region 3 Risk Based Criteria (RBC), when available, or EPA Region 9 Preliminary Remediation Goals (PRG) or Utah Department of Environmental Quality (DEQ) remediation goals when RBC are not available. No reclamation soil criteria have been established for gallium or germanium.

Prior to initiation of the first phase of sampling, Ponds 2 and 4 were sampled to evaluate waste materials for off-site disposal. The waste characteristics of water and solids from Ponds 2 and 4 were to be verified in response to an accidental chromium wastewater release to Ponds 2 and 4 that occurred in August, 2002. This sampling was completed in March, 2004. Phase I field sampling was conducted between April and June, 2004 and consisted of collecting 84 soil samples in predetermined locations around process and storage areas and 19 surface soil background samples from inside and outside the lease property.

Phase II field sampling was conducted in February, 2004 and consisted of collecting a total of 18 solid and liquid samples from Ponds 3 and 4 in order to properly characterize the material for off-site disposal. Due to the presence of liquid material in Pond 4, additional samples not anticipated in the SAP were collected. Phase III field sampling of Pond 2 soil was completed in July, 2004 following removal of all wastes and the liner from the pond. Soil samples from the topographic depression located east of Pond 1 were also collected in July, 2004. Phase III field sampling of Ponds 1, 3, and 4 has not been conducted to date and is expected to be performed in January, 2005.

Removal of waste from Pond 2 was completed in July, 2004. All wastes removed from Pond 2, including sub-soils from beneath the liner of the pond, were shipped to the ECDC landfill in Price, Utah. At the time of the site visit, Pond 1 was empty but the liner had not been removed. Sediments in Ponds 3 and 4 were waiting for disposal.

SITE VISIT

On October 19, 2004, Ninyo & Moore personnel visited the OMG Apex facility with Mr. John Krause of BIA and met with Mr. Michael McNally of OMG. Following a briefing on the progress of reclamation activities, Mr. McNally conducted a tour of the Apex facility and surrounding area for the Ninyo & Moore and BIA personnel.

FINDINGS

The following findings have been determined from document review, field sampling, and site visit activities.

- Concentrations of one or more constituents exceeded background levels at all of the AOCs investigated except the Tungsten Building, Tungsten Reagent Area, and Tungsten Feed Storage Area. However, samples exceeding RSC screening concentrations were limited to the following locations:
  - Cobalt Sulfate Building (cobalt, arsenic)
  - Cobalt Nitrate Building (arsenic, lead)
  - Germanium Ore Storage and Handling Area (arsenic)
  - Maintenance Shop Fuel Storage Area (TPH)

- Analytical results for germanium or gallium were not reported for any samples collected from eight AOCs and were reported for only a portion of the samples from six other AOCs. In particular, germanium and gallium concentrations are available for just four of the 17 samples collected in the Germanium Ore Handling Area (AOC-5).

- During the site visit, conducted on October 19, 2004, a used oil aboveground storage tank (AST) and associated concrete secondary containment enclosure was noted east of the Maintenance Shop and Warehouse Area. Used oil to a depth of several inches was observed covering the entire bottom of the containment enclosure. No evidence of leakage outside of the containment enclosure was observed.

CONCLUSIONS AND RECOMMENDATIONS

- Gallium, germanium, and tungsten were not included in background sampling and have no established RSC. Ninyo & Moore recommends that background concentrations of these metals be measured and OMG, in consultation with Brown and Caldwell, establish RSC based on background concentrations, physical properties, chemical toxicity, and/or other relevant factors in conjunction with BIA, the Band, Utah DEQ, and USEPA.

- Established RSC for chromium VI, cobalt, and iron significantly exceed the corresponding PRGs for direct contact exposure pathways for industrial soil established by EPA Region 9. Ninyo & Moore believes that the most conservative scientifically justifiable criteria should be used to establish RSC and recommends that the EPA Region 9 PRGs for chromium VI (64 mg/kg), cobalt (1,900 mg/kg), and iron (100,000 mg/kg) be adopted as the applicable RSC.

- The RSC for arsenic has been established at 260 mg/kg which is equivalent to the non-cancer endpoint PRG for direct contact exposure pathways for industrial soil established by EPA Region 9. Ninyo & Moore believes that safety concerns dictate that the cancer endpoint PRG of 1.6 mg/kg, rather than the non-cancer endpoint, be used as a starting

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point for establishing the arsenic RSC. Due to the significant background concentrations of arsenic in area soil (20.4 mg/kg), Ninyo & Moore recommends that a value of 66 mg/kg, which is equivalent to three times the PRG for industrial soil plus the average background concentration (22 mg/kg), be established for arsenic.

- Analytical results are not consistently reported for each sample in each AOC. Ninyo & Moore recommends that samples remaining to be collected from Ponds 1, 3, and 4 (AOC-15, 16, and 17) be analyzed for the full range of metals for which RSC have been, or will be, established. Additionally, gallium and germanium analytical results should be reported for the Germanium Ore Handling Area and rationale should be given for non-reporting of metals results from other AOCs.

- The concentration of arsenic in one soil sample from the Topographic Depression (AOC-14) exceeded the RSC of 260 mg/kg. In the event that a revised RSC of 66 mg/kg is adopted for arsenic, an additional four soil samples from this AOC will exceed the RSC. Ninyo & Moore recommends that soil from AOC-14 be excavated to a depth of 12 inches and disposed of in accordance with applicable local, state, and federal regulations to mitigate any potential risk.

- One sample from the Fuel Storage ASTs located in AOC-12 exceeded the established RSC of 100 mg/kg for TPH. Ninyo & Moore recommends that additional delineation sampling be conduct in the vicinity of the ASTs with subsequent excavation of soil exceeding the RSC for TPH.

- Ninyo & Moore recommends that the used oil AST and associated secondary containment enclosure be drained and cleaned, with the used oil properly disposed of in accordance with applicable local, state, and federal regulations

We appreciate the opportunity to be of service to you on this project. Should you have any questions, please contact the undersigned at your convenience.

Sincerely,
NINYO & MOORE

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Project Environmental Scientist

Robert M. Troisi, C.E.M.
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GB/RMT/ltk

Enclosures: Figure 1 - Site Location Map
Figure 2 - Apex Site Areas of Concern

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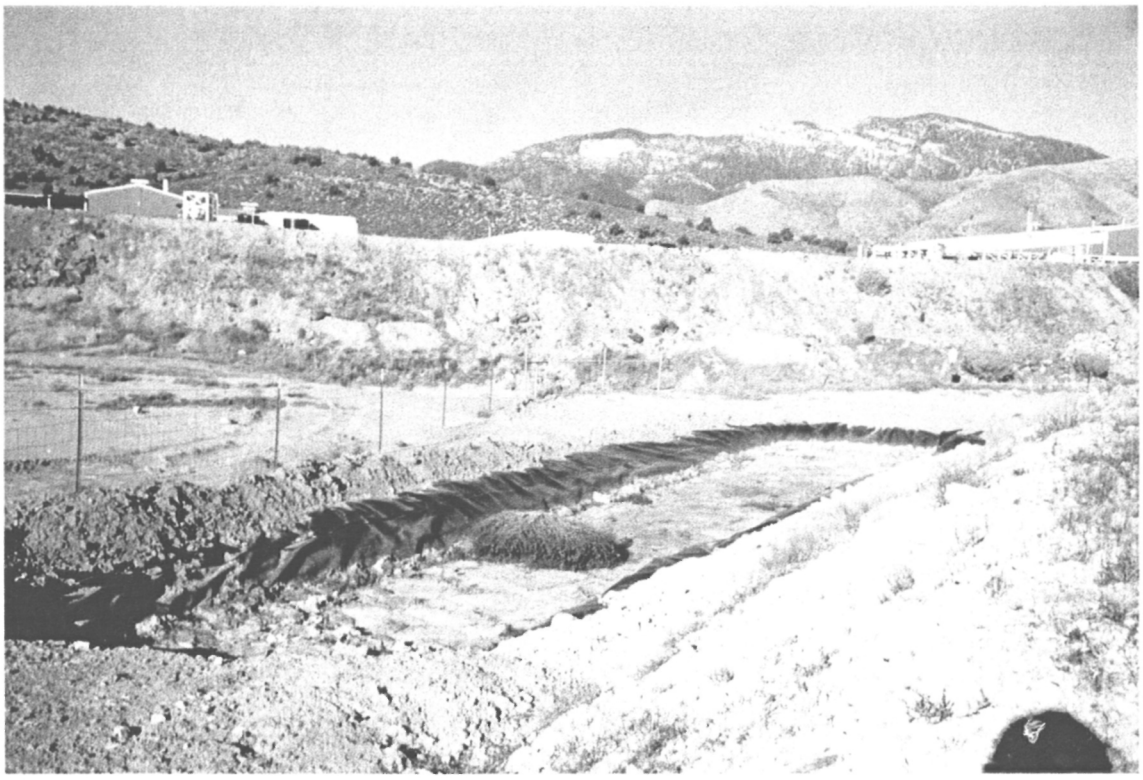

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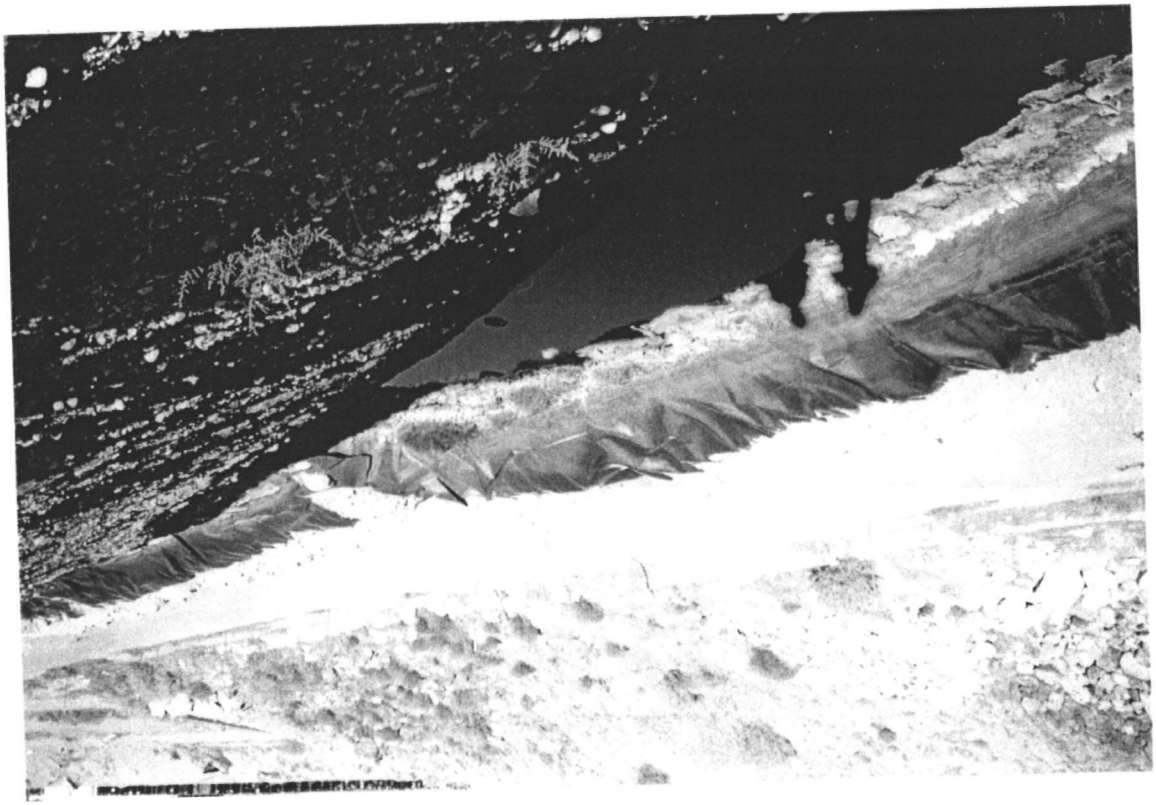

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